I N D O N E S I A

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Have 30 years of nutritional improvement in Southeast Asia disappeared in one year of the crisis?

The average body mass index (BMI) among women of reproductive age in Central Java has dropped by 0.45 kg/m^2, almost equivalent to the 0.5 kg/m^2 increase achieved over the past 30 years, according to the latest findings.

Recent research by Pelletier and Rahn, based on a compilation and analysis of mean BMI in 1,432 published samples from developing countries, has shown that average BMI among women in South and Southeast Asian countries had increased from 20.9 kg/m^2 in 1960 to 21.4 kg/m^2 in 1990.[1]

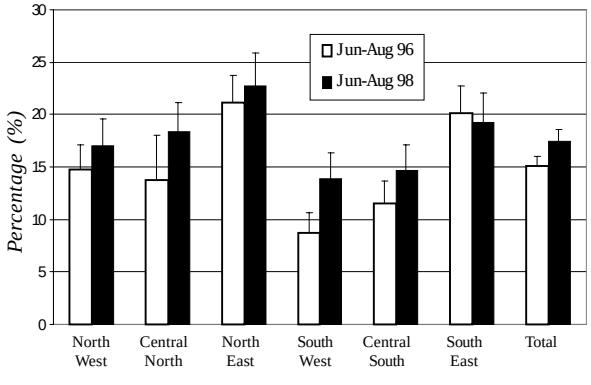
Before the start of the crisis, mean BMI among the women in Central Java was 21.5 kg/m^2. Data collected in June-August 1998, a year after the onset of the crisis, revealed that mean BMI had significantly decreased to 21.0 kg/m^2 ($p<0.000$). The data were collected in a collaborative effort between Helen Keller International (HKI) Indonesia, the University of Diponegoro, and the Indonesian Department of Health during June-August 1996 and June-August 1998.

The Central Java data reveals that across almost all socioeconomic strata, as indicated by maternal education level, bodyweight among women of reproductive age fell by approximately 1 kg between June-August 1996 and June-August 1998 [*see figure 2, p2*]. Consequently, the prevalence of maternal malnutrition among them has significantly increased from 15.1 per cent to 17.5 per cent ($p<0.000$, *see figure 1*).

How does low BMI among women relate to the crisis?

The economic crisis in Indonesia has caused the prices of basic commodities, such as rice, to increase beyond the purchasing capability of a growing number of families, many of whom have been pushed below the poverty line due to loss of jobs and increased living costs. As a result, many families have had to sacrifice the quantity and quality of their food intake.

Figure 1.
The prevalence of maternal malnutrition (BMI<18.5 kg/m^2) in Central Java, by ecological zone, before and after the start of the crisis



[1] Pelletier DL, Rahn M. *Trends in body mass index in developing countries.* Food and Nutrition Bulletin, vol. 19, no. 3, 1998, p223-239

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The Central Java data shows this decreased food intake has resulted in increased malnutrition among women of reproductive age, or *maternal malnutrition*, as indicated by the prevalence of low BMI.

BMI is calculated as an individual's weight divided by her/his height squared (kg/m^2). A subject with a low BMI has a low bodyweight in relation to height, due to temporarily or chronically inadequate food intake. Maternal malnutrition expressed by BMI is a good and early indicator of the population's food insecurity [*see table below*], because very often, a woman reduces her own food intake before reducing that of her children and/or her husband.

Because the most tangible impact of the crisis is the reduction in real household income (and, thus, the reduction in food intake), the most effective indicator of the crisis' impact is maternal BMI.

Table 1.
Prevalence of low BMI (<18.5 kg/m^2) among the adult population and the severity of food insecurity[2]

Prevalence of BMI <18.5 kg/m^2	Severity of food insecurity
3-5%	Normal, no food insecurity
5-9%	Warning sign, monitoring required
10-19%	Poor situation
20-39%	Serious situation
≥ 40%	Critical situation

What are the consequences of a lower BMI?

Reduced work capacity:
The productivity of Indian male industrial workers with a BMI of 16.5 kg/m^2 was found to be 1.5 times lower than that of workers with a BMI of 23 kg/m^2.[2]

Increased morbidity and mortality:
A low BMI reduces resistance to infection. The number of days ill among Rwandan women with a BMI below 17 kg/m^2 was 5.5 times higher than women with a BMI above 18.7 kg/m^2. A study in India found that the annual death rate among men with a BMI below 16 kg/m^2 was almost three times that of men with a BMI above 18.5 kg/m^2.[2]

Less energy available for other activities:
Energy expenditure is reduced when BMI is lower. Often, this means that obligatory needs are still met, but that time and energy spent on activities such as housework, care and leisure activities is reduced. This has a negative impact on food preparation and childcare.

Greater risk of pregnancy complications:
A lower BMI is also associated with complications in pregnancy, such as reduced intrauterine growth and low birthweight babies.

Reduced quality of breastmilk:
A reduction of the nutritional status of the mother will also reduce the quality of her breastmilk and hence result in reduced quality of the food consumed by her breastfed child.

Maternal malnutrition, as indicated by a low BMI, will also have indirect repercussions on all sectors of society, including:

- Increased risk of infant mortality due to the increased risk of complications during pregnancy
- Increased risk of child intellectual and physical impairment due to decreased maternal caring practices and/or disease or infection
- Decreased level of social reproductive activities, such as household chores, child care, exercise and general socialization
- Decreased output in the workplace resulting in lost productivity and its negative impact on the economy

[2] World Health Organization, *Physical status: the use and interpretation of anthropometry. Report of a WHO expert committee.* WHO, Geneva, 1995

Figure 2. Maternal bodyweight, by education level, before and after the start of the crisis

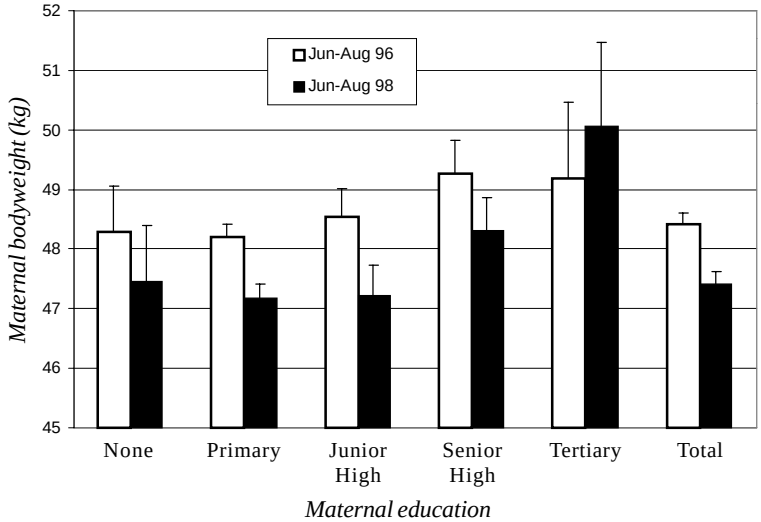
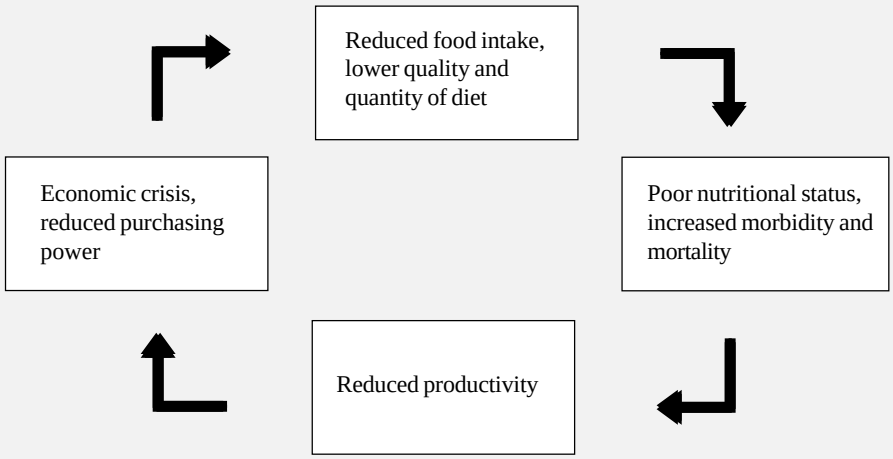


Figure 3. The self-perpetuating cycle of the economic crisis



The vicious cycle of the crisis' impact

Maternal malnutrition is part of a vicious cycle which, in this case, begins with the trappings of crisis-induced poverty, that translates to low food intake, leading to malnutrition. Malnutrition perpetuates itself through decreased work output due to decreased stamina and more frequent, more severe and more protracted illnesses, resulting in lost productivity in the work place and at home.

Lost economic productivity results in, microcosmically, low-to-no chance of improvement of personal socioeconomic conditions, and on a macrocosmic scale, perpetuation of the economic crisis. On both levels, it ensures the cycle of poverty, malnutrition and 'lost economy' continues if nothing is done to break it.

Recommendations

General:

- There is a great need for inter-agency cooperation in urban areas to develop and implement innovative approaches toward tackling:
  - food insecurity
  - lack of reliable information
- There is a need for shorter term planning and rapid response programs to complement longer term, sustainable projects

Monitoring and surveillance:

- Maternal malnutrition is the best anthropometric indicator for monitoring the impact of the economic crisis
- Food intake and food expenditure are the best intermediate indicators for monitoring the impact of the crisis, as well as for monitoring the coverage, effectiveness and performance of food-aid programs and crisis-related safety net programs
- Maternal malnutrition and childhood wasting are the best anthropometric indicators for monitoring the effectiveness and performance of food-aid programs and crisis-related safety net programs

Interventions:

- Pregnant and lactating women should also be a target group of food aid programs and crisis-related safety net programs
- Food aid and supplementary foods should provide micronutrients, in addition to calories and protein
  [Please refer to the *Indonesia Crisis Bulletin*, issues 2 and 3, for reports on the increase of micronutrient deficiencies as a result of the crisis.]

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Partners:

Ministry of Health, Government of Indonesia
University of Diponegoro, Semarang
UNICEF

For information and correspondence contact:

Martin W. Bloem, MD, PhD
Regional Director, Asia-Pacific

Helen Keller International
P.O. Box 4338
Jakarta Pusat
Indonesia

Tel 62-21-526-3872 / 252-6059 / 525-0529
Fax 62-21-525-0529

For specific information on technical issues:
Martin W. Bloem, MD, PhD • mwbloem@compuserve.com
Roy Tjiong, MD • rtjiong@compuserve.com
Saskia de Pee, PhD • sdepee@compuserve.com
Mayang Sari, MSc • nutri1@dnet.net.id

For general information:
Federico Graciano • graciano@dnet.net.id

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